paragraph (e) of this section, the Associate Administrator, or a designated representative, may at any time require demonstration of compliance by a manufacturer, through testing in accordance with this subpart, that packagings meet the requirements of this subpart. As required by the Associate Administrator, or a designated representative, the manufacturer shall either:

(1) Conduct performance tests or have tests conducted by an independent testing facility, in accordance with this subpart; or

(2) Make a sample IBC available to the Associate Administrator, or a designated representative, for testing in accordance with this subpart.

(k) *Coatings.* If an inner treatment or coating of an IBC is required for safety reasons, the manufacturer shall design the IBC so that the treatment or coating retains its protective properties even after withstanding the tests prescribed by this subpart.

(l) *Record retention.* (1) The person who certifies an IBC design type shall keep records of design qualification tests for each IBC design type and for each periodic design requalification as specified in this part. These records must be maintained at each location where the IBC is manufactured and at each location where design qualification and periodic design requalification testing is performed. These records must be maintained for as long as IBCs are manufactured in accordance with each qualified design type and for at least 2.5 years thereafter. These records must include the following information: name and address of test facility; name and address of the person certifying the IBC; a unique test report identification; date of test report; manufacturer of the IBC; description of the IBC design type (e.g., dimensions, materials, closures, thickness, representative service equipment, etc.); maximum IBC capacity; characteristics of test contents; test descriptions and results (including drop heights, hydrostatic pressures, tear propagation length, etc.). Each test report must be signed with the name of the person conducting the test, and name of the person responsible for testing.

(2) The person who certifies each IBC must make all records of design qualification tests and periodic design requalification tests available for inspection by a representative of the Department upon request.

[Amdt. 178–103, 59 FR 38074, July 26, 1994, as amended by Amdt. 178–108, 60 FR 40038, Aug. 4, 1995; 66 FR 45386, Aug. 28, 2001; 66 FR 33452, June 21, 2001]

§ 178.802 Preparation of fiberboard IBCs for testing.

(a) Fiberboard IBCs and composite IBCs with fiberboard outer packagings must be conditioned for at least 24 hours in an atmosphere maintained:

(1) At 50 percent ± 2 percent relative humidity, and at a temperature of 23° ± 2 °C (73 °F ± 4 °F); or

(2) At 65 percent ± 2 percent relative humidity, and at a temperature of 20° ± 2 °C (68 °F ± 4 °F), or 27 °C ± 2 °C (81 °F ± 4 °F).

(b) Average values for temperature and humidity must fall within the limits in paragraph (a) of this section. Short-term fluctuations and measurement limitations may cause individual measurements to vary by up to ± 5 percent relative humidity without significant impairment of test reproducibility.

(c) For purposes of periodic design requalification only, fiberboard IBCs or composite IBCs with fiberboard outer packagings may be at ambient conditions.

[Amdt. 178–103, 59 FR 38074, July 26, 1994, as amended at 66 FR 45386, Aug. 28, 2001]

§ 178.803 Testing and certification of IBCs.

Tests required for the certification of each IBC design type are specified in the following table. The letter X indicates that one IBC (except where noted) of each design type must be subjected to the tests in the order presented:

Performance test	IBC type					
	Metal IBCs	Rigid plastic IBCs	Composite IBCs	Fiber-board IBCs	Wooden IBCs	Flexible IBCs
Vibration	[6] X	[6] X	[6] X	[6] X	[6] X	[1,5] X
Bottom lift	[2] X	X	X	X	X	
Top lift	[2] X	[2] X	[2] X			[2,5] X
Stacking	[7] X	[7] X	[7] X	[7] X	[7] X	[5] X
Leakproofness	[3] X	[3] X	[3] X			
Hydrostatic	[3] X	[3] X	[3] X			
Drop	[4] X	[4] X	[4] X	[4] X	[4] X	[5] X
Topple						[5] X
Righting						[2,5] X
Tear						[5] X

[1] Flexible IBCs must be capable of withstanding the vibration test.
[2] This test must be performed only if IBCs are designed to be handled this way. For metal IBCs, at least one of the bottom lift or top lift tests must be performed.
[3] The leakproofness and hydrostatic pressure tests are required only for IBCs intended to contain liquids or intended to contain solids loaded or discharged under pressure.
[4] Another IBC of the same design type may be used for the drop test set forth in § 178.810 of this subchapter.
[5] Another different flexible IBC of the same design type may be used for each test.
[6] The vibration test may be performed in another order for IBCs manufactured and tested under provisions of an exemption before October 1, 1994 and for non-DOT specification portable tanks tested before October 1, 1994, intended for export.
[7] This test must be performed only if the IBC is designed to be stacked.

[Amdt. 178–108, 60 FR 40039, Aug. 4, 1995, as amended at 64 FR 51919, Sept. 27, 1999; 66 FR 45386, 45390, Aug. 28, 2001]

§ 178.810 Drop test.

(a) *General.* The drop test must be conducted for the qualification of all IBC design types and performed periodically as specified in § 178.801(e) of this subpart.

(b) *Special preparation for the drop test.* (1) Metal, rigid plastic, and composite IBCs intended to contain solids must be filled to not less than 95 percent of their capacity, or if intended to contain liquids, to not less than 98 percent of their capacity. Pressure relief devices must be removed and their apertures plugged or rendered inoperative.

(2) Fiberboard, wooden, and flexible IBCs must be filled with a solid material to not less than 95 percent of their capacity.

(3) Rigid plastic IBCs and composite IBCs with plastic inner receptacles must be conditioned for testing by reducing the temperature of the packaging and its contents to –18 °C (0 °F) or lower. Test liquids must be kept in the liquid state. Anti-freeze should be used, if necessary.

(c) *Test method.* Samples of all IBC design types must be dropped onto a rigid, non-resilient, smooth, flat and horizontal surface. The point of impact must be the most vulnerable part of the base of the IBC being tested. Following the drop, the IBC must be restored to the upright position for observation.

(d) *Drop height.* (1) For all IBCs, drop heights are specified as follows:

(i) Packing Group I: 1.8 m (5.9 feet).

(ii) Packing Group II: 1.2 m (3.9 feet).

(iii) Packing Group III: 0.8 m (2.6 feet).

(2) Drop tests are to be performed with the solid or liquid to be transported or with a non-hazardous material having essentially the same physical characteristics.

(3) The specific gravity and viscosity of a substituted non-hazardous material used in the drop test for liquids must be similar to the hazardous material intended for transportation. Water also may be used for the liquid drop test under the following conditions:

(i) Where the substances to be carried have a specific gravity not exceeding 1.2, the drop heights must be those specified in paragraph (d)(1) of this section for each IBC design type; and

(ii) Where the substances to be carried have a specific gravity exceeding 1.2, the drop heights must be as follows:

(A) Packing Group I: SG × 1.5 m (4.9 feet).

(B) Packing Group II: SG × 1.0 m (3.3 feet).

(C) Packing Group III: SG × 0.67 m (2.2 feet).

(e) *Criteria for passing the test.* For all IBC design types there may be no loss of contents. A slight discharge from a